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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,792	09/01/2005	Edward J Sarc	07811.0019-00	8239
22852 7590 08/03/2007 FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER PARVINI, PEGAH	
			ART UNIT 1755	PAPER NUMBER
			MAIL DATE 08/03/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,792	Applicant(s) SARE ET AL.	
	Examiner Pegah Parvini	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 13-18, 27, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,393,340 to Slepety's et al.

3. Regarding claims 1 and 6, Slepety's et al. teach a calcined kaolin pigment in which 80-98% by weight of it has a particle size of less than 2 micron, and its solid content is from 20% to 70% by weight (column 1, lines 41-43; column 2, lines 65-66; column 3, lines 8-10).

With reference to particle size of at least about 1 μm , as recited in claim 1 of the instant application, the reference discloses a particle size of less than 2 μm ; thus, it is noted that there is an overlapping range between the claimed particle size and the disclosed one. Also, with reference to at least about 58% by weight of the particles having the particle size of at least 1 μm , as recited in claim 1, it is noted that "at least 40%" includes any percentage above 40%; the reference discloses 80-98% by weight as noted above. The same is true for the language recited in claim 6.

Slepetys et al., as indicated above, teach a calcined kaolin pigment having overlapping ranges of particle sizes and amounts having those particle sizes with instant claims. The reference fails to disclose an anticipatory example or range, which are sufficiently specific to anticipate the present claims. However, as noted above, the reference teaches overlapping ranges with the present claims, and overlapping ranges have been held *prima facie* obviousness. See MPEP § 2144.05.

Therefore, it would have been obvious at the time of the invention was made, to have selected the overlapping portion of range because overlapping ranges have been held to establish *prima facie* obviousness. See MPEP § 2144.05.

4. Regarding claims 2-4, Slepetys et al. disclose that 80%-98% by weight of the particles have the size of less than 2 μm (column 3, line 8-10).

It should be noted that there is an overlapping range between the disclosed range and the claimed values in claims 2-4. The particle sizes recited in claims 2-4 are "from bout 1 μm to about 10 μm ", and "at least about 1 μm " in which the Slepetys et al. reads on both limitations by disclosing a particle size of less than 2 μm .

With reference to "at least about" 45%, 50%, and 40% by weight of the particles having the claimed particle sizes, as recited in claims 2-4, it is noted that the Slepetys et al. disclose an amount of 80-98% which is higher than any of those claimed amounts and further, Slepetys et al. disclose that the particles size for that amount is less than 2 μm . Again, there is an overlapping range between the claimed range and the disclosed one.

5. Regarding claims 13-18, Slepetyts et al. teach the use of dispersant, such as polyacrylate in an amount of 0.2 to 0.4% based on the weight of the clay to increase the solids of the slip of clay (column 6, lines 29-35).

6. Regarding claim 27, Slepetyts et al. disclose that grinding is done via "wet grinding" process (column 6, lines 22-25). Also, the clay is ground to produce mechanically delaminated pigment grades (column 4, lines 48-57).

7. Regarding claim 37, Slepetyts et al. disclose the use of calcined kaolin clay in paints (column 1, lines 41-43). Furthermore, it is noted that Slepetyts et al. teach calcined kaolin slurry having properties recited in claim 1 (column 1, lines 5-12; column 3, line 9; column 6, lines 48-49).

8. Claims 1-3, 5-6, 26, 29-30, and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,150,289 to Chen et al.

9. Regarding claims 1-3 and 5-6, Chen et al. teach aqueous slurry of calcined kaolin clay used in coating compositions which contain about 30% to 70% by weight of solids; also, the reference discloses that about 98% by weight of the calcined kaolin has

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an equivalent spherical diameter (esd) of less than 5 μm (column 4, lines 22-26; column 6, lines 1-14).

It is noted that the language of claims read as "at least 40%" or "at least 45%" having particle size of "at least about 1 μm " or "at least about 2 μm ".

Chen et al., as indicated above, teach aqueous slurry of calcined kaolin clay used in coating compositions having overlapping ranges of particle sizes and amounts having those particle sizes with instant claims. The reference fails to disclose an anticipatory example or range, which are sufficiently specific to anticipate the present claims. However, as noted above, the reference teaches overlapping ranges with the present claims, and overlapping ranges have been held *prima facie* obviousness. See MPEP § 2144.05.

Therefore, it would have been obvious at the time of the invention was made, to have selected the overlapping portion of range because overlapping ranges have been held to establish *prima facie* obviousness. See MPEP § 2144.05.

10. Regarding claims 29 and 36, Chen et al. teach treating calcined kaolin clay to obtain a particle size distribution such that about 98% by weight of the particles have a an esd less than 5 μm (column 9, lines 60-67; column 10, lines 1-55). The process includes adding water and obtaining the final product of the desired calcined kaolin clay.

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11. Regarding claim 30, Chen et al. disclose that in a preferred embodiment of the disclosed invention, a cationic polymer is used as a dispersant in the aqueous slurry containing calcined kaolin clay (column 6, lines 53-56).

12. Regarding claims 26 and 35, Chen et al. disclose that through the process, which results in the desired clay particle size, a dry grinding process in a conventional ball mill is done as well (column 6, lines 15-23). It is noted that this grinding process is not considered a mechanical grinding process by applicants' definition.

13. Claims 7-22 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepety's et al. in view of US Application Publication No. 2003/0177952 A1 to Cummings et al.

14. Regarding claims 7-22, Slepety's et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and in which about 80-98% by weight of it has a particle size of less than 2 μm . Furthermore, Slepety's et al. disclose the use of a clay dispersant such as polyacrylate in an amount of 0.2% to 0.4% based on the clay.

Slepety's et al. do not disclose the use of at least one thickener, and at least one biocide in the slurry.

Cummings et al. disclose that some optional additives may be added to a paint coating composition comprising of processed kaolin clay; such materials are, for example, thickeners such as montmorillonite, CMC (carboxymethyl cellulose), HMC (hydroxymethyl cellulose), HEC (hydroxyethyl cellulose) in an amount of up to about 2% by weight, dispersants such as polyelectrolytes such as polyacrylates in an amount of up to about 2% by weight, and biocides such as metaborate in an amount of up to 1% by weight (paragraphs[0010], [0070], [0073], [0075], [0085], and [0087]). In addition, the reference discloses that the pigment product has particles having esd less than about 2 μm ([0023]).

Slepetys et al. and Cummings et al. are analogous art because they are from the same area of art, which is paper coating and coating compositions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Slepetys et al. to include the optional additives as that taught by Cummings et al. motivated by the fact that biocides are used as spoilage control agents and, as known in the art, they are used to prevent mold growth. Moreover, the pigment product of the disclosed invention provides improved gloss, brightness and opacity to the coating composition ([0012]). Additionally, in general, the three groups of additives mentioned above are a variety of classes of additives used depending upon the type of coating and the material to be coated in the coating composition (0070)]; therefore, it would have been obvious to a person of ordinary skill in the art to have added them depending on the end use.

Therefore, it would have been obvious to combine Cummings et al. with Slepetysh et al. to obtain the invention as specified in claims 7-22.

15. Regarding claim 38, Slepetysh et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 μ m.

Slepetysh et al. do not disclose a method of coating paper or coated paper-board.

Cummings et al. disclose a method of coating paper in which use of generally high solids content is desirable but not so much as to increase the viscosity of the slurry (paragraphs [0088]-[0093]).

Slepetysh et al. and Cummings et al. are analogous art because they are from the same area of art, which is paper coating and coating compositions.

It would have been obvious to modify Slepetysh et al. to include a method of coating paper as that taught by Cummings et al. motivated by the fact that there are different methods of coating in which each differs from the other depending on the material to be coated, the coating composition to be applied and the other factors as determined by the operator such as speed and ease of runnability ([0088]). Moreover, the pigment product of the disclosed invention provides improved gloss, brightness and opacity to the coating composition ([0012]). Furthermore, the reference discloses the solids content which overlaps with what is claimed in the instant application; furthermore, that range of solids content is obtained after mixing the slurry with water ([0093]).

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Therefore, it would have been obvious to combine Cummings et al. with Slepety's et al. to obtain the invention as specified in claim 38.

16. Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepety's et al. in view of US Patent No. 5,028,268 to Ince et al.

17. Regarding claims 7-9, Slepety's et al. disclose a novel calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and in which about 80-98% by weight of it has a particle size of less than 2 μm .

Slepety's et al. is silent as to the use of at least one thickener in the kaolin slurry.

Ince et al. disclose calcined kaolin clay slurry with improved rheological properties (column 1, lines 6-10). Ince et al., further, disclose the addition of a small amount of a conventional binder or stabilizer to be added to the aqueous slurry kaolin clay (column 5, lines 18-23). As some examples of such binder, Ince et al. disclose carboxy methyl cellulose (CMC), hydroxyl ethyl cellulose, and polyvinyl pyrrolidone (column 5, lines 21-23).

It is noted that the disclosed sample compounds mentioned in the reference are some of the same ones claimed in the instant application to be used as thickeners to stabilize the slurry.

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Ince et al. and Slepetyts et al. are analogous art because they are from the same field of endeavor of improving slurries of calcined kaolin clay useful in paper coating and paper industry.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Slepetyts et al. to include any of the thickener compounds as that taught by Ince et al. motivated by the fact that the disclosed invention by Ince et al. does not impair the desirable characteristics which are provided to the paper by the use of such materials, such as (when used as a filler) increase in opacity, high light scattering, etc (column 5, lines 38-47).

Therefore, it would have been obvious to combine Ince et al. with Slepetyts et al. to obtain the invention as claimed in claims 7-9.

18. Regarding claims 10-12, Ince et al. disclose the addition of 2 to 10 pounds per ton (0.1% to 0.5%), based on the weight of the dry clay, of a thickener compound as mentioned above, to the clay slurry (column 5, lines 18-24).

19. Claims 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepetyts et al. in view of US Application Publication No. 2003/0141224 A1 to Pruett et al.

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20. Regarding claims 23-25, Slepetyts et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and in which about 80-98% by weight of it has a particle size of less than 2 μm .

Slepetyts et al. is silent as to the pH range and the use of a pH modifier.

Pruett et al. disclose a method for beneficiating and dewatering kaolin clays used in pigments and paper coatings and paper filling comprising of several steps ([0031]-[0040]). Furthermore, they disclose that the pH during deflocculation in step (c) will be raised to between 6-12; this will be done using suitable agents such as sodium carbonate, sodium hydroxide, and ammonium hydroxide ([0044]).

Slepetyts et al. and Pruett et al. are analogous art because they are from the same field of endeavor of kaolin clay pigment composition used in paper coating and process of making or improving them.

At the time of the invention, it would have been obvious to modify Slepetyts et al. to include the pH range and pH modifiers such in the process of treating and improving the kaolin clay as that taught by Pruett et al. The motivation for doing so would have been that as disclosed by Pruett et al., iron oxide treatment need not to involve acidification or subsequent filtration; instead, the treatment of iron oxide impurities can be carried out over a range of pH compatible with that used during selective flocculation ([0025]). Moreover, addition of agents, such as sodium hydroxide, which are capable of increasing pH facilitate deflocculation ([0044]). Furthermore, the removal of iron impurities is enhanced ([0029]).

Therefore, it would have been obvious to combine Pruett et al. with Slepety's et al. to obtain the invention as specified in claims 23-25.

21. Regarding claim 26, Pruett et al. do not disclose nor suggest subjecting the calcined kaolin to mechanical grinding; therefore, it reads on the limitation of claim 26.

22. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slepety's et al. in view of US Patent No. 5,282,898 to Wu.

23. Regarding claim 19, Slepety's et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 μm .

Slepety's et al. is silent as to the use of biocides in the kaolin clay slurry.

Wu teaches the use of biocides in calcined kaolin slurry (column 1, lines 9-12; column 6, line 11).

Slepety's et al. and Wu are analogous art because they are from the same field of endeavor of improving calcined kaolin pigment in paper coating and paper filling.

It would have been obvious to a person of ordinary skill in the art to modify Slepety's et al. in order to include the use of biocides in the calcined kaolin slurry as that taught by Wu motivated by the fact that Wu, also, teaches the addition of some conventional additives such as biocides as well as thickening agents and dispersants in

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the pigment slurry preparation and that the calcined kaolin slurry has the pH range of 4 to 10 (column 5, lines 46-51; column 6, lines 7-13). The disclosed invention by Wu teaches simple inexpensive means to decrease the abrasivity of abrasive pigments such as calcined kaolin (column 3, lines 55-57).

Therefore, it would have been obvious to combine Wu with Slepety's et al. to obtain the invention as claimed in claim 19.

24. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Slepety's et al.

25. Regarding claim 34, Chen et al. teach aqueous slurry of calcined kaolin containing about 30% to about 70% by weight of solids, based on the weight of the said aqueous slurry in such a way that about 98% by weight of the calcined kaolin has an equivalent spherical diameter (esd) of less than 5 μm (column 4, lines 22-26; column 6, lines 1-14). The reference, furthermore, teaches the process of treating calcined kaolin clay to obtain the desired particle size distribution and particle size (column 9, lines 60-67; column 10, lines 1-55).

Chen et al. do not disclose subjecting the clay to mechanical grinding.

Slepety's et al., however, disclose wet grinding procedure for the kaolin clay to be calcined and used in that invention as described in detail above (column 6, lines 22-25).

Slepetys et al. and Chen et al. are analogous art because they are from the similar problem solving area of obtaining and improving calcined kaolin clay used in paper coating and coating composition.

It would have been obvious to modify Chen et al. to include the wet grinding procedure, which is carried out with particulate hard grinding media, as that taught by Slepetys et al. (column 6, lines 23-25). The motivation for doing so would have been that, as disclosed by Slepetys et al., the clay feed would have been sufficiently fluid to be pumped and transported through the grinding equipment (column 6, lines 25-28); also, the coarse reject fraction produced as a result of separating a coarse kaolin clay to coarse and fine particles in the early stages of the process are used as well.

26. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slepetys et al. in view of US Patent No. 3,309,214 to Werner Joseph et al.

27. Regarding claim 28, Slepetys et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 80-98% by weight of it has a particle size of less than 2 μm .

Slepetys et al. do not disclose mullite in the claimed clay slurry.

Werner Joseph et al. disclose a calcined kaolin pigment and a process of their production (column 1, lines 10-17). The reference discloses that the kaolin clay is subjected to shock calcining, followed by a second, more prolonged heat treatment; this

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process causes at least partially crystallization to γ -Al₂O₃ and mullite (column 1, lines 40-48, 58-61; column 3, lines 7-28, 69-75).

Slepetys et al. and Werner Joseph et al. are analogous art because they both disclose calcined kaolin clay to be used as a pigment.

It would have been obvious to a person of ordinary skill in the art to modify Slepetys et al. in order to include mullite in the clay slurry motivated by the fact that Werner Joseph et al. disclose that the disclosed two-stage heat treatment processes which results in a calcined kaolin containing mullite that is used as a pigment, would result in a pigment having better whiteness, higher brightness, and better hiding power (column 1, lines 40-48).

Therefore, it would have been obvious to combine Werner Joseph et al. with Slepetys et al. to obtain the invention as specified in claim 28.

28. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Cummings et al.

29. Regarding claims 30-32, Chen et al. disclose aqueous slurry of calcined kaolin clay used in coating composition which contains about 30% to 70% by weight of solids, and about 98% by weight of the calcined kaolin has an equivalent spherical diameter (esd) of less than 5 μ m (column 4, lines 22-26; column 6, lines 1-14).

Chen et al., even though disclosing the use of a dispersant in the aqueous calcined kaolin clay slurry, does not expressly disclose the addition of a thickener and a pH modifier to the slurry.

Cummings et al. disclose that some optional additives may be added to a paint coating composition comprising of processed kaolin clay; such materials are, for example, thickeners such as montmorillonite, CMC (carboxymethyl cellulose), HMC (hydroxymethyl cellulose), HEC (hydroxyethyl cellulose) in an amount of up to about 2% by weight, dispersants such as polyelectrolytes such as polyacrylates in an amount of up to about 2% by weight, and biocides such as metaborate in an amount of up to 1% by weight (paragraphs[0010], [0070], [0073], [0075], [0085], and [0087]). In addition, the reference discloses that the pigment product has particles having an esd less than about 2 μm ([0023]).

Slepetys et al. and Cummings et al. are analogous art because they are from the same area of art, which is paper coating and coating compositions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Slepetys et al. to include the optional additives as that taught by Cummings et al. motivated by the fact that biocides are used as spoilage control agents and, as known in the art, they are used to prevent mold growth. Moreover, the pigment product of the disclosed invention provides improved gloss, brightness and opacity to the coating composition ([0012]). Additionally, in general, the three groups of additives mentioned above are a variety of classes of additives used depending upon the type of coating and the material to be coated in the coating composition (0070)); therefore, it

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would have been obvious to a person of ordinary skill in the art to have added them depending on the end use.

It is noted that Chen et al., as described in detail above, disclose a coating composition, calcined kaolin slurry, having particle size and particle size distribution all within the claimed range as claimed in the instant application.

Therefore, it would have been to combine Cummings et al. with Chen et al. in order to obtain the invention as specified in claims 30-32.

30. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Pruett et al.

31. Regarding claim 33, Chen et al. disclose aqueous slurry of calcined kaolin clay used in coating composition which contains about 30% to 70% by weight of solids, and about 98% by weight of the calcined kaolin has an equivalent spherical diameter (esd) of less than 5 μm (column 4, lines 22-26; column 6, lines 1-14).

Chen et al., even though disclosing the use of a dispersant in the aqueous calcined kaolin clay slurry, does not expressly disclose the use of a pH modifier.

Pruett et al. disclose a method for beneficiating and dewatering kaolin clays used in pigments and paper coatings and paper filling comprising of several steps ([0031]-[0040]). Furthermore, they disclose that the pH during deflocculation in step (c) will be

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raised to between 6-12; this will be done using suitable agents such as sodium carbonate, sodium hydroxide, and ammonium hydroxide ([0044]).

Slepetys et al. and Pruett et al. are analogous art because they are from the same field of endeavor of kaolin clay pigment composition used in paper coating and process of making or improving them.

At the time of the invention, it would have been obvious to modify Slepetys et al. to include the pH range and pH modifiers such in the process of treating and improving the kaolin clay as that taught by Pruett et al. The motivation for doing so would have been that as disclosed by Pruett et al., iron oxide treatment need not to involve acidification or subsequent filtration; instead, the treatment of iron oxide impurities can be carried out over a range of pH compatible with that used during selective flocculation ([0025]). Moreover, addition of agents, such as sodium hydroxide, which are capable of increasing pH facilitate deflocculation ([0044]). Furthermore, the removal of iron impurities is enhanced ([0029]).

Response to Amendment

32. Applicants' amendment to the specification by deleting the abstract and submitting a new one in which "µm" has been substituted for "arm" in reply filed on May 23, 2007, is acknowledged. As such, the objection to the specification regarding this term set forth in the First Office action is withdrawn.

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33. Applicants' amendment to claim 3 by eliminating the extra phrase of "wherein" in page 10, filed May 23, 2007, is acknowledged. As such, the objection to claim 3 regarding the repetition of said phrase set forth in the First Office action is withdrawn.

Response to Arguments

34. Applicants' arguments, see pages 19-13, filed May 23, 2007, with respect to the rejections made under 35 USC 102(b) using the two references of Slepety's et al. and Chen et al. regarding the point that they do not meet the limitations of claims 1-6, 13-18, 27, 37 and 1-6, 29-30, 35-36 respectively, because the statements taken from said references used in the First Office actions do not meet the limitations of particle size and the amount of specific particle size claimed in said claims, have been considered and found persuasive. Therefore, the rejections have been withdrawn.

However, the examiner respectfully submit that upon further considerations, a new ground(s) of rejection is made in view of said references, using other disclosed embodiments and statement in those references.

35. Applicant's arguments, see pages 13-14, filed May 23, 2007, with respect to the rejection(s) of claim(s) 7-9, 11-14, 16-22, and 38 under 35 USC 103(a) have been fully considered and found persuasive. Therefore, the said rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of Slepety's et al., Chen et al., Cummings et al., Pruett et al., Ince et al., and Wu as indicated in details above.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 6,334,894 B1 to Kostuch.

US Patent No. 5,320,897 to Kondo et al.

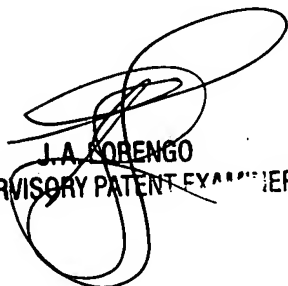
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pegah Parvini whose telephone number is 571-272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PP


J.A. FORENGO
SUPERVISORY PATENT EXAMINER